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(54) **SYSTEM AND METHOD FOR AUDIO CALLER IDENTIFICATION SERVICE**

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See application file for complete search history.

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(57) **ABSTRACT**

Methods and systems are disclosed for audibly announcing information associated with a calling party in an advanced intelligent network comprising a service switching point, a service control point and a services node. The service switching point is adapted to suspend calls directed to an audio caller identification service and to forward information concerning the calling and called parties to the service control point. The service control point is adapted to direct the call to a selected services node. The services node sends a query to retrieve information concerning the calling party from the service control point. If necessary, other service control points may be queried for the information. While the aforementioned processing is occurring, the calling party continues to hear a ringing signal. When the aforementioned information is retrieved, the service directs a second call to the called party. When an operator from the called party station answers the phone, the service audibly announces information concerning the calling party and the called party is provided an opportunity to accept or reject the call.

37 Claims, 2 Drawing Sheets

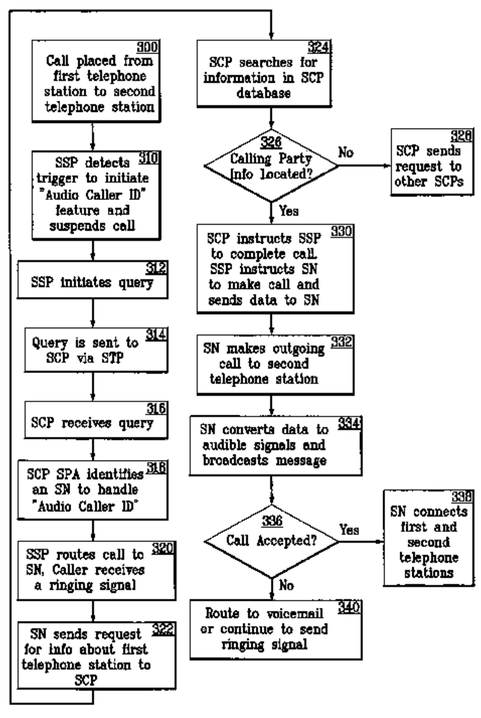

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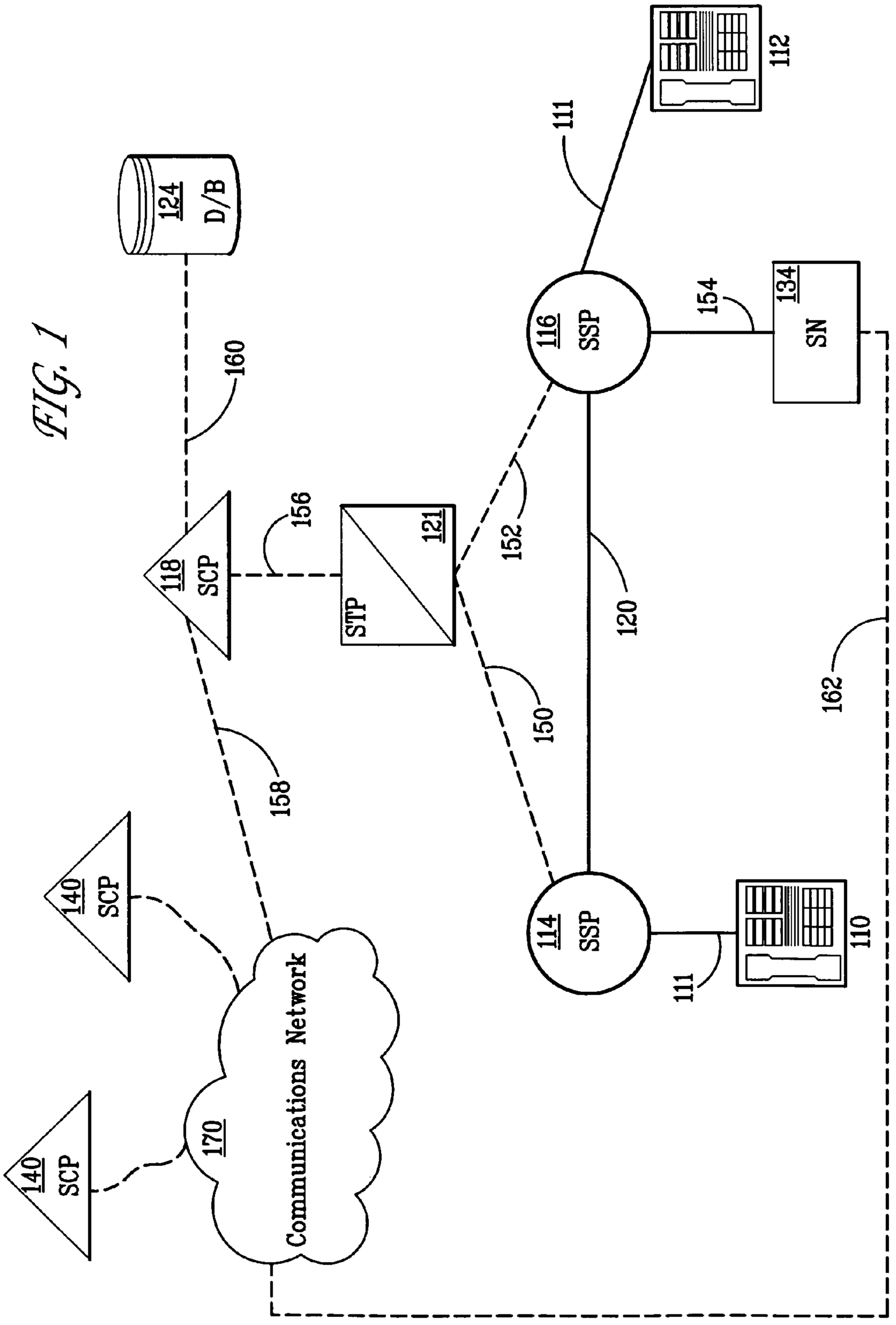
FIG. 1


124 D/B
160
118 SCP
156
STP
121
152
112
111
116 SSP
154
134 SN
120
150
158
140 SCP
114 SSP
111
110
162
Communications Network
170
140 SCP

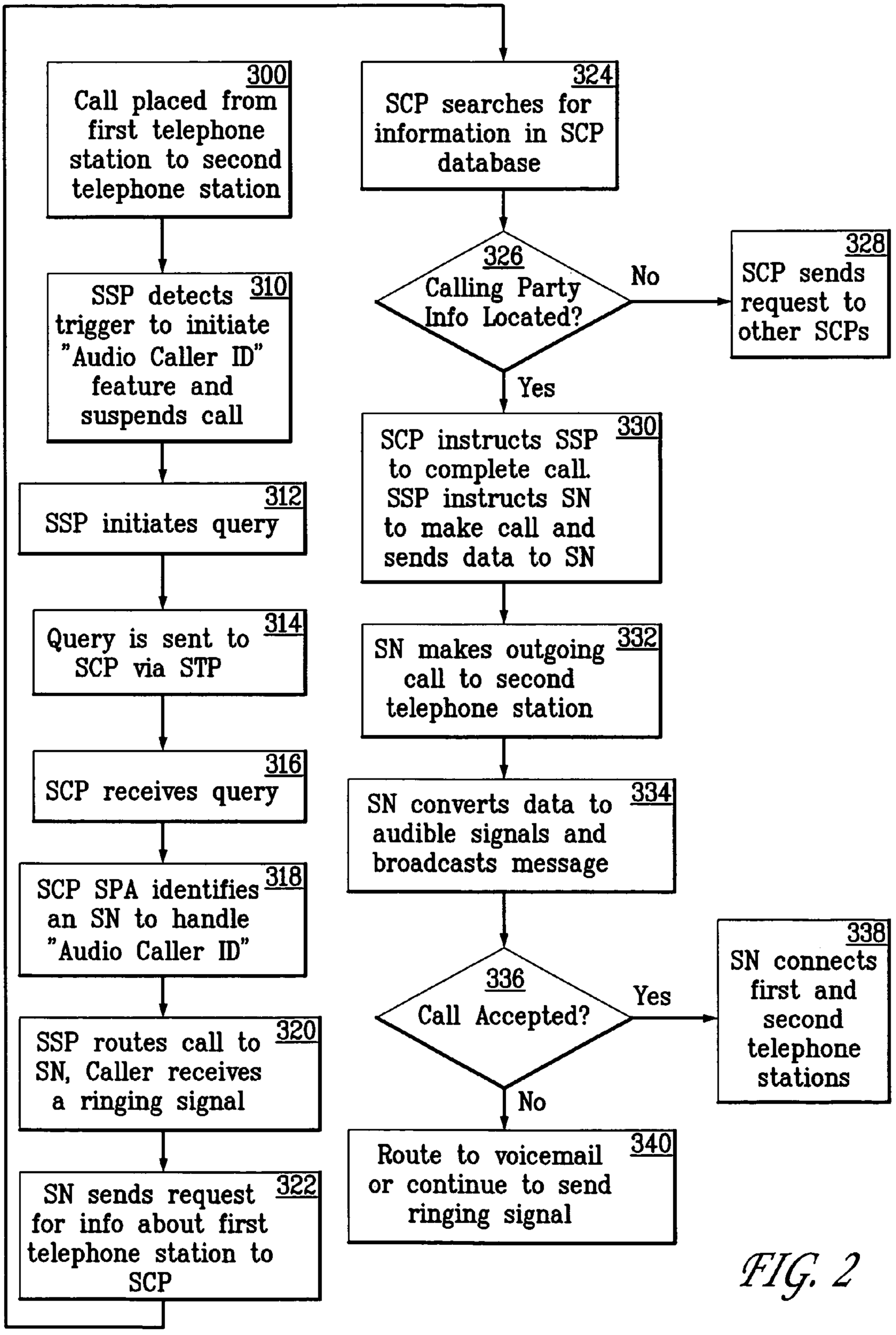

300
Call placed from first telephone station to second telephone station
310
SSP detects trigger to initiate "Audio Caller ID" feature and suspends call
312
SSP initiates query
314
Query is sent to SCP via STP
316
SCP receives query
318
SCP SPA identifies an SN to handle "Audio Caller ID"
320
SSP routes call to SN, Caller receives a ringing signal
322
SN sends request for info about first telephone station to SCP
324
SCP searches for information in SCP database
326
Calling Party Info Located?
No
328
SCP sends request to other SCPs
Yes
330
SCP instructs SSP to complete call. SSP instructs SN to make call and sends data to SN
332
SN makes outgoing call to second telephone station
334
SN converts data to audible signals and broadcasts message
336
Call Accepted?
Yes
338
SN connects first and second telephone stations
No
340
Route to voicemail or continue to send ringing signal

FIG. 2

SYSTEM AND METHOD FOR AUDIO CALLER IDENTIFICATION SERVICE

FIELD OF THE INVENTION

The present invention relates to the field of telecommunications. More particularly, the present invention relates to telephone caller identification systems.

BACKGROUND OF THE INVENTION

In recent years, a number of new telephone service features have been provided by an Advanced Intelligent Network (AIN). The AIN evolved out of a need to increase the capabilities of the telephone network architecture in order to meet the growing needs of telephone customers or users. The AIN architecture generally comprises two networks, a data messaging network and a circuit-switched, trunked communications network. The trunked communications network handles voice and data communications between dispersed network locations, whereas the data messaging network is provided for controlling operations of the trunked communications network.

Calling Number Identification and "Caller ID" are common names for AIN subscriber services that identify the telephone line from which an incoming call originates. Generally, Caller ID provides the called party with a visual alphanumeric display of the calling party's name and/or telephone number on a Caller Line Identity Display (CLID). This service has become very popular in today's telecommunications market due to subscribers' desire for increased privacy and control. By providing the called party with the identity of the calling party upon receipt of an incoming call, the called party can selectively field incoming calls.

Typically, mobile phone users pay for mobile phone usage including incoming calls. Hence, mobile phone users are likely to subscribe to Caller ID services, such as calling number ID and caller name ID to screen incoming calls, if such a service is available. Mobile phone users who subscribe to Caller ID may find it difficult to read the visual calling name/number data on the cellular phone display, especially while involved in other activities, such as driving. Hence, it is helpful for mobile phone users to receive Caller ID information audibly, rather than visually, so as not to be distracted from other activities.

Traditional wired telephone users as well may find it useful to have an audio caller identification service. Persons who have vision difficulties or who have to keep their eyes on what they are doing may find an audio caller identification system extremely helpful. Additionally, a customer with a cordless phone or several handsets may find it inconvenient to go to the location of a CLID, which may be in another room, to see who is calling. Such users may find it more convenient to receive Caller ID information audibly at the telephone handset.

To accommodate mobile phone users and to address the limitations of visual Caller ID services, there have been proposed systems for audio Caller ID. Existing audio Caller ID systems, however, are limited by relying on technology used by visual Caller ID systems. Visual Caller ID information is limited by the display characteristics of the CLID to 15 characters in length, which is sometimes insufficient to completely and uniquely identify the calling party. Hence, existing audio Caller ID systems, relying on existing visual Caller ID technology, are similarly limited to 15 characters of information, resulting in frequent truncation of names. It would be a great advantage, therefore, if an audio Caller ID system provided more than 15 characters of information to be converted to speech so that names or other data would not be truncated, allowing a calling party to be completely and uniquely identified.

Additionally, in existing audio Caller ID services, for those subscribing to both visual Caller ID and Audio Caller ID, the calling number information displayed on the CLID is incorrect. Rather than displaying the number from which the call was placed, the CLID displays the number of the services node used to complete the call. It would be a great advantage if the correct information would be displayed on the CLID for those who subscribe to both visual and audio Caller ID.

The present invention is directed to an improved audio Caller ID system. Specifically, the present invention is directed to remedying both the truncation of identification information and the incorrect display of the calling party number on the CLID.

SUMMARY OF THE INVENTION

In the present invention, the aforementioned need is satisfied by a system that is employed in combination with an AIN-based telephone network having a service control point (SCP), a database of information associated with the SCP, in which the database includes at least 50 characters of data for customer name, and a services node (SN). The audio Caller ID service is initiated when a calling party calls a subscriber to the service. The calling party hears normal ringing while the service places a second call to the called party. When the called party answers the telephone, the service provides an audible announcement containing information regarding the calling party such as the calling party's name, city and state, or the calling party's telephone number. If the called party accepts the call, the parties are connected. If the called party rejects the call, the call may be forwarded to the called party's voicemail or the ringing signal may be continued at the calling party handset until a ring timer expires. A nationwide customer name database structure comprised, for example, of interconnected regional databases, could be utilized, making it possible to announce any caller's name within the United States.

BRIEF DESCRIPTION OF THE DRAWINGS

The foregoing summary, as well as the following detailed description of preferred embodiments of the present invention, will be better understood when read in conjunction with the appended drawings. For the purpose of illustrating the invention, there are shown in the drawings embodiments that are presently preferred. As should be understood, however, the invention is not limited to the precise arrangements and instrumentalities shown. In the drawings:

FIG. **1** illustrates, in a general block diagram form, an Advanced Intelligent Network (AIN) based system for implementing intelligent network management features, such as those which may be employed in connection with the present invention; and

FIG. **2** is a flowchart of a process for providing audio caller information in accordance with an aspect of the present invention.

The present invention is further described in the detailed description that follows, by reference to the noted plurality of drawings by way of non-limiting examples of preferred embodiments of the present invention, in which like reference numerals represent similar parts throughout the several views of the drawings.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

Advanced Intelligent Network (AIN) System

Referring now to the figures, a preferred embodiment of the systems and methods of the present invention will be described. Basic telephony concepts and terminology are used throughout the description as would be understood by one of skill in the art.

Referring now to FIG. **1**, there is shown an exemplary telecommunication network. This exemplary environment is the public switched telecommunications network (PSTN). A portion of the PSTN is illustrated in FIG. **1** and is generally described below.

According to an aspect of the present invention, systems and methods for audio caller identification may be implemented for an AIN or AIN-type network using a computer telephony system. AIN systems are described in U.S. Pat. No. 5,701,301, which is incorporated herein by reference in its entirety. In particular, an AIN network with advanced intelligent network capabilities may be utilized to implement the various features and aspects of the invention. It should be noted, however, that the implementation of the present invention is not limited to AIN-based networks and other advanced or intelligent networks and arrangements may be used to implement the invention.

Referring now to the accompanying drawings, FIG. **1** illustrates a simplified AIN-based network arrangement incorporating the various features of the invention, as further described below. The AIN includes a variety of interconnected network elements. A group of such network elements includes a plurality of central offices (COs) **114**, **116** capable of generating AIN queries, also called service switching points (SSPs). A central office or SSP is a switch and the terms are used interchangeably herein. SSPs **114** and **116** may comprise, for example DMS100 or 5ESS switches. These switches may be manufactured by, for example,

Lucent Technologies, Inc. or Nortel Networks. As further illustrated in FIG. **1**, SSPs **114**, **116** have a plurality of subscriber lines **111** connected thereto. Each SSP serves a designated group of subscriber lines, and thus, the SSP **114** or **116** that serves a particular line may be referred to as its serving switch. Each line is connected typically to a piece of terminating equipment including a plurality of telephones designated, e.g., as **110**, **112**. Although telephones are illustrated as the pieces of terminating equipment in FIG. **1**, those skilled in the art will understand that such pieces include other telecommunications devices such as facsimile machines, computers, modems, etc.

In the embodiment of FIG. **1**, the system includes a first telephone station which for illustrative purposes will be referred to as telephone station **110** and a second telephone station **112**. SSPs **114**, **116** are interconnected by a plurality of trunk circuits **120**. These are the voice path trunks that interconnect the SSPs to connect communications. The term "communication" or "call" is used herein to include all messages that may be exchanged between caller and called party in the network illustrated in FIG. **1**. Trunk **120** may be either a SS7 controlled multi-frequency trunk (MF), or primary rate interface (PRI) trunk and the type of trunk will be in accordance with both the sending and receiving SSP to which it is connected.

In the example shown in FIG. **1**, each switch may include different types of facilities and/or triggers. SSPs **114** and **116** are each programmable switches which may perform the following functions: recognize AIN-type calls, launch queries to service control point (SCP) **118**, and receive commands and data from, for example, SCP **118** to further process and route AIN-type calls. When one of SSPs **114**, **116** is triggered by an AIN-type call, the triggered SSP **114**, **116** formulates and sends an AIN query. Based on the reply from the AIN type call, SSP **114**, **116** responds to call processing instructions from the network element in which the AIN service logic resides. According to an aspect of the invention, the AIN service logic may reside at SCP **118**.

Each of SSPs **114**, **116** is connected to a signal transfer point (STP) **121** via respective data links **150**, **152**. In one embodiment, these are data links employing a signaling protocol referred to as Signaling System 7 (SS7), which is well-known to those skilled in the art, although it should be understood that any other suitable protocol could be employed without departing from the spirit and scope of the invention.

In order to facilitate signaling and data messaging, each SSP **114**, **116** may be equipped with Common Channel Signaling (CCS) capabilities, e.g., SS7, which provides two-way communications of data messages over CCS links **150** and **152** between components of the AIN network. The data messages may be formatted in accordance with the Transaction Capabilities Applications Part (TCAP). Alternatively, Integrated Service Digital Network, (ISDN) Users Part (ISUP) may be used for signaling purposes between, for example, SSPs **114** and **116**. In such a case, SSPs **114** and **116** may be equipped with the capability to map appropriate data between TCAP and ISUP protocols, and vice versa. The telephone network essentially employs an upper-level software controlled network through the STPs **121** and SCPs **118**.

AIN SSPs **114** and **116** may allow normal switch processing to be suspended at specific points in a call so that the switch may send an AIN message query via signaling transfer point (STP) **121** to SCP **118**. SCP **118** may execute software based service logic and return call-processing instructions to the triggering AIN SSP. New services may be provisioned by assigning AIN SSP triggers to customer lines, trunks, and/or North American Numbering Plan (NANP) telephone numbers.

Much of the intelligence of the AIN resides in a type of AIN element referred to as a service control point (SCP) **118** that is connected to STP **121** over an SS7 or other suitable data link **156**. Among the functions performed by SCP **118** is the hosting of network databases which may be stored in database object **124**. Database object **124** is shown as a database communicatively coupled to SCP **118**, although data storage object **124** may be embodied as a component within SCP **118**, such as an internally-mounted hard disk device. The databases stored in data storage object **124** may be used in providing telecommunications services to a customer. Typically, SCP **118** is also the repository of service package applications (SPAs) that are used in the application of telecommunications services, enhanced features, or subscriber services to calling lines. Additionally, SPAs may use databases for providing telecommunication services.

A set of triggers may be defined at SSPs **114**, **116**. A trigger in the AIN is an event associated with a particular call that initiates a query to be sent to SCP **118**. The trigger may cause SCP **118** to access processing instructions with respect to the particular call. The results of processing at SCP **118**, which may include database inquiries, are sent back to SSP **114**, **116** through STP **121**. The return packet may include instructions to SSP **114**, **116** as to how to process the call. The instructions may be to take some special action as a result of a customized calling service, enhanced feature, or

subscriber service. In response, SSP **114**, **116** may move through its call states, and generate further packets that are used to set up and route calls. Similar devices for routing calls among various local exchange carriers are provided by regional STP and regional SCP.

An example of such a trigger is a termination attempt trigger (TAT), which causes a query to be sent to SCP **118** whenever an attempt is made to terminate a call. Another type of trigger that may be used is a Public Office Dialing Plan (PODP) trigger although other suitable triggers may be used.

The system of FIG. **1** may also include services circuit node (SCN) **134**, which may also be referred to herein as services node (SN) **134**. SN **134** is a programmable interactive data system that can act as a switch to transfer calls. SN **134** may provide interactive help, collect voice information from participants in a call, provide notification functions and/or store subscriber data. SN **134** may be a Lucent Technologies Star Server FT Model 3200 or Model 3300 although other units may be employed without departing from the scope of the invention. SN **134** may include voice and dual multi-frequency (DTMF) signal recognition devices and voice synthesis devices. In addition, SN **134** may include a data assembly interface. In addition, SN **134** may request SCP **118** to retrieve information from database **124** containing information concerning calling party **110**, may receive information from SCP **118**, may make outgoing calls to subscriber station **112**, may convert alphanumerical textual data to speech, may announce converted information retrieved from SCP **118** to subscriber station **112** and/or may connect telephone station **110** to subscriber station **112**. Communications link **154** between SSP **116** and SN **134** may be a primary rate interface (PRI) or basic rate interface (BRI) line or any other suitable telephone line. PRI and BRI lines are circuit-switched ISDN lines. SN **134** and network **170** may be communicatively coupled via data link **162** using an X25, TCP/IP or SS7 protocol or any other suitable protocol.

Accordingly, connections by links **150**, **152**, **156**, **158** and **162** are for signaling purposes and allow SSPs **114** and **116** to send and receive messages to and from SCP **118** and SN **134**. For purposes of illustration, various features of the present invention will now be described from the standpoint of a switch implementing AIN protocols, provisioned with TAT (termination attempt trigger), or PODP (public office dialing plan) triggers. However, as will be apparent to those of ordinary skill in the art based on the disclosure provided herein, the present invention is not limited to implementation through these particular triggers and protocols and may be designed and provisioned with a network utilizing other triggers and protocols. For example, SSP **114** and/or **116** may represent a TCP/IP telecommunications switching network gateway. One skilled in the art will further recognize that the above-described network is a simplified network meant for explanatory purposes. It is likely that a telephone network may comprise numerous user stations, SSPs, STPs, SCPs, and SNs along with other telephone network elements.

Existing Audio Caller ID Systems

In existing audio Caller ID systems, telephone station **110** (the calling party) having for example telephone number (215) 555-9999, places a call to subscribing station **112**, (the called party). SSP **114** halts processing and sends a message to SCP **118**, requesting instructions. The message contains Caller ID information concerning telephone station **110** including the telephone number of telephone station **110**, (215) 555-9999. SCP **118** instructs SSP **114** to route the call to an incoming line (for example, (215) 555-0001) of a services node SN **134**. SN **134** places a call through an outgoing line (for example, (215) 555-0002) to the called party. SSP uses (215) 555-0002 as the calling number. When subscriber station **112** (called party) answers the call, the SN **134** announces the 15-character identification information retrieved from a database containing 15 characters of textual data. SN **134** translates the 15 characters of textual data to speech using well-known text-to-speech conversion processes. Because the call was placed by SN **134**, the telephone number displayed on the Caller Line Identity Display (CLID) will be the number of the outgoing line of SN **134**, (215) 555-0002, instead of the number of telephone station **110** (the calling party), (215) 555-9999.

Improved and Extended Audio Caller ID System

According to one aspect of the invention, a system for providing an improved audio caller identification service within the AIN or AIN-type environment is provided. Requests for calling party information such as caller identification are served by the AIN telephone network such that a called party that subscribes to the audio caller identification service will hear an audible announcement containing information associated with the calling party and is provided with an opportunity to accept or reject the call before the connection with the calling party is made.

The Audio Caller ID service checks the call route and the availability of connection. If the called number is inactive or busy, the appropriate treatment is applied (e.g., announcement, voice mail or busy tone). If the called number is a landline number, SCP **118** queries the destination switch to determine the state of the line. If the called number is a wireless number, a wireless protocol including but not limited to TIA/EIA-41 or GSM may be used to send a message to the wireless network to determine the state of the wireless handset. If the called number is unavailable the call is completed, allowing the destination switch **116** to provide the correct announcement or tone. If the called number is active or available, telephone station **110** (the calling party) begins to hear normal ringing.

For example, if telephone station **110** (the calling party) places a call to a subscribing station **112**, (the called party), the call is suspended while SSP **114**, using routing instructions provided by SCP **118** and SN **134**, places a second call to subscribing station **112** (the called party). Unlike existing systems, a Custom Dialing Plan (CDP) or Feature Code trigger causes the correct calling number (the telephone number of telephone station **110**), to replace the number of SN **134** ((215) 555-0002, in the example) that in existing systems would be displayed on a Caller Line Identity Display (CLID). Hence, in accordance with the present invention, the telephone number of telephone station **110** (the calling party) will be displayed on the CLID for subscribers of both visual Caller ID and Audio Caller ID. For more information concerning the use of Custom Dialing Plan or Feature Code triggers, U.S. Pat. No. 5,991,377, titled "System and Method for Manipulating Data Fields in a Call Structure for Synchronizing Billing Information and Retaining Original Calling Party Information," filed Nov. 23, 1999, and U.S. patent application Ser. No. 09/468888, titled "Method and System for Providing Calling Number Restoral", filed Dec. 22, 1999, which are herein incorporated by reference, can be reviewed.

The Audio Caller Identification system is initiated when a caller calls a wireless or landline subscriber. The service first

checks to determine whether the called number is inactive or busy, in which case the appropriate treatment is applied, for example.

Upon determining that subscriber station **112** is available, SCP **118** instructs SSP **114** to route the call to SN **134** and telephone station **110** receives a ringing signal. Information associated with telephone station **110** (the calling party) in a preferred embodiment is retrieved from a database **124** stored on or associated with SCP **118**. Database **124** comprises data such as, but not limited to, customer name. Customer name, or other data, such as, but not limited to, pronunciation codes or wave files can be at least 50 characters in length or the equivalent thereof. Upon retrieval of data associated with telephone station **110**, subscribing station **112** receives a ringing signal. When subscribing station **112** answers the call, SN **134** audibly announces information associated with telephone station **110** (the calling party) to subscriber station **112** (the called party). Subscriber station **112** (the called party) receives an audible message asking for a response and is provided with an opportunity to accept or reject the call. If subscriber station **112** (the called party) elects to accept the call, SN **134** connects telephone station **110** (the calling party) with subscriber station **112** (the called party). If subscriber station **112** (the called party) elects to reject the call, SN **134** directs the call to a voice mailbox of subscriber station **112** or, if subscriber station **112** has no voice mailbox, telephone station **110** continues to receive a ringing signal until a ring timer expires, at which time the call is ended (terminated).

The Audio Caller ID service checks the call route and the availability of connection. If the called number is inactive or busy, the appropriate treatment is applied (e.g., announcement, voice mail or busy tone). If the called number is a landline number, SCP **118** queries the destination switch to determine the state of the line. If the called number is a wireless number, a wireless protocol including but not limited to TIA/EIA-41 or GSM may be used to send a message to the wireless network to determine the state of the wireless handset. If the called number unavailable the call is completed, allowing the destination switch **116** to provide the correct announcement or tone. If the called number is active or available, telephone station **110** (the calling party) begins to hear normal ringing.

Referring now to FIG. **2**, there is illustrated an exemplary overview of the call flow logic according to an aspect of the present invention. The call flow for the audio caller identification service begins when, at step **300**, an operator at telephone station **110** (the calling party) places a call to subscriber station **112** (the called party). The call is routed over the telephone network via normal procedures. At step **310**, SSP **114** detects the request for the audio caller identification service and suspends the call.

At step **312**, SSP **114** initiates a query associated with the audio caller identification service. At step **314**, the query is routed to SCP **118** via STP **121**. The query is directed to identifying a services node (SN) to handle the audio caller identification request. In one embodiment, the selection of an SN to handle the request is determined based upon the identity of the subscriber station **112** (the called party). Accordingly, the query contains information identifying telephone station **110** (the calling party) and subscriber station **112** (the called party).

At step **316**, SCP **118** receives the query and at step **318**, SCP **118** responds to the query by launching an instance of a logic program that is referred to herein as a service package application (SPA). SPA queries database **124** located at SCP **118** using the information contained in the query. Specifically, the application uses the information identifying telephone station **112** to resolve which services node will handle the audio caller identification request.

Database **124** at SCP **118** designates SN **134** as responsible for handling the call. At step **318**, SCP **118** transmits instructions for handling the audio caller identification request to SSP **114**. The instructions include information that identifies SN **134** as responsible for handling the audio caller information service. In a preferred embodiment, SCP **118** instructs SSP **114** to route the call to a Multi Line Hunt Group (MLHG) number or Access Dial Number (DN), for example line (215) 555-0001 on SN **134**.

At step **320**, SSP **114** routes the call to SSP **116** and SSP **116** routes the call to SN **134**. At this point a ringing signal is heard at telephone station **110** (the calling party). Routing from SN **114** to SN **134** is based on services node information sent by SCP **118**. At step **322**, SN **134** accepts the call from SSP **110**, placing SN **134** in communication with telephone station **110** (the calling party) and sends a message to SCP **118** using X-25, SS7 or TCP/IP protocols to retrieve information associated with telephone station **110** (the calling party). In response, at step **324**, the SCP attempts to retrieve information contained in a CNAM (Customer Name) database **124** associated with SCP **118**. Database **124** may contain 50 characters of data or more associated with telephone station **110**. If, at step **326**, the retrieval is successful (information associated with the telephone number of the calling party **110** is found in database **124**), SCP **118** sends the retrieved information to SN **134** at step **330**.

If, however, no information associated with telephone station **110** was found in database **124**, at step **328**, SCP **118** sends a request to other SCPs **140** over communications network **150** for information associated with telephone station **110**. If information is retrieved from SCPs **140**, the retrieved information is sent to SN **134** at step **330**. A call from a calling party for which no information is available may be announced as "unknown number." A call from a private (i.e. blocked) number may be announced as "private number."

At step **332**, SCP **118** instructs SSP **116** to complete the call. SSP **116** instructs SN **134** to make the call. SN **134** makes an outgoing call, preferably on line (215) 555-0002 to subscriber station **112**. SCP **118** may query Home Location Register (HLR) to determine called party status, if the called party is a wireless number.

At step **334**, when the call is answered, SN **134** converts information (data) received from SCP **118** to audible signals and broadcasts an audible announcement to subscriber station **112** (the called party) relaying the information associated with telephone station **110** (the calling party) and asking the subscriber station **112** (the called party) to accept or reject the call. In a preferred embodiment SN **134** may employ computer-generated text-to-speech conversion routines or in an alternate, embodiment, pre-recorded sound files or other suitable files may be played. The announcement further provides directions as to how to accept or reject the call. For example, the announcement may direct an operator of subscribing station **112** to "press any key to accept the call." Similarly, operator of subscribing station **112** may be directed to "press the 'end' or 'power off' button to reject the call" if the telephone is a wireless phone. An audio calling name landline subscriber may be instructed to hang up the telephone to reject the call. Failure to press any key may be defined as a tacit indication of acceptance of the call. In an alternate embodiment, failure to press any key within a desired time may result in rejection of the call.

If at step **336**, a response is received at SN **134** from subscriber station **112** (the called party) accepting the call, at step **338**, SN **134** connects telephone station **110** (the calling party) and subscriber station **112** (the called party). In a preferred embodiment a call transfer function is employed in which case SN **134** signals to SSP **114** to transfer call **1** (the call from telephone station **110** to subscriber **112** that was routed to incoming line (215) 555-0001 of SN **134**) to call**2** (outgoing line (215) 555-0002 of SN **134** to subscriber station **112**) so that telephone station **110** is connected to subscriber station **112**, freeing up SN **134** for further calls. In another embodiment two ports (incoming and outgoing lines) of SN **134** are tied up to maintain the connection between telephone station **110** and subscriber station **112**.

If at step **336**, a response is received at SN **134** from subscriber station **112** (the called party) rejecting the call, at step **340** the call is routed to the subscriber station **112**'s voicemail or if subscriber station **112** has no voicemail, telephone station **110** continues to hear a ringing signal until a ring timer expires, at which time the call ends.

In an alternate embodiment, databases distributed over multiple SNs contain data of at least 50 characters per field. In accordance with this embodiment, at step **322** and **324**, SN **134** checks to see if its resident database contains information concerning the calling party, and if information concerning the calling party is found, that information is retrieved and announced. If no information concerning the calling party is found on a database at SN **134**, SN **134** accesses SCP **118** through communications link **162** to retrieve the information as previously described.

As described above, the present invention provides a system for audio calling party identification of information associated with a calling party. Upon receipt of a call, a subscriber to the service receives an audible announcement of information about the calling party. The subscriber may accept or reject the call based the received information. Thus, the system frees persons from having to consult a CLID or other visual display to identify the calling party.

It is noted that the written description provided herein contains acronyms which refer to various communication services and system components. Although known, use of several of these acronyms is not strictly standardized in the art. For purposes of the written description herein, acronyms will be defined as follows:

10D—10 Digit
AIN—Advanced Intelligent Network
CCIS—Common Channel Interoffice Signaling
CCS—Common Channel Signaling
CDP—Customized Dialing Plan
CO—Central Office
CPR—Call Processing Record
CPN—Calling Party Number
DLN—Dialed Line Number
DRS—Data and Reports System
EO—End Office
ISCP—Integrated Service Control Point
ISUP—ISDN Users Part
LATA—Local Access and Transport Area
MF—Multi-Frequency
NANP—North American Numbering Plan
NPA—Numbering Plan Area
NXX—Central Office Code
PODP—Public Office Dialing Plan
PRI—Primary Rate Interface
PSTN—Public Switched Telephone Network
SCE—Service Creation Environment
SCP—Service Control Point
SMS—Service Management System
SS7—Signaling System 7
SSP—Service Switching Point
STP—Signaling Transfer Point
TAT—Termination Attempt Trigger
TCAP—Transaction Capabilities Applications Part
TG—Trunk Group
TN—Telephone Number

It is noted that the foregoing examples have been provided merely for the purpose of explanation and are in no way to be construed as limiting of the present invention. While the invention has been described with reference to preferred embodiments, it is understood that the words which have been used herein are words of description and illustration, rather than words of limitation. Further, although the invention has been described herein with reference to particular means, materials and embodiments, the invention is not intended to be limited to the particulars disclosed herein; rather, the invention extends to all functionally equivalent structures, methods and uses, such as are within the scope of the appended claims. Those skilled in the art, having the benefit of the teachings of this specification, may effect numerous modifications thereto and changes may be made without departing from the scope and spirit of the invention in its aspects. Additionally, certain features and functions attributed to a particular network element may be performed by another network element without departing from the scope and spirit of the invention. As an example, if a function such as a database query is attributed to a network element such as an SSP, such query may be performed alternatively or additionally by an STP or SCP or by any other network element without departing from the spirit and scope of the invention.

What is claimed is:

1. A method for providing audible and visual caller information for calls routed from a first telephone station to a second telephone station via a switching network, comprising:

placing a first telephone call from the first telephone station directed to the second telephone station via a first service switching point of the switching network;

placing a second telephone call from a services node to the second telephone station via a second service switching point, the second call transmitting an audible message to the second telephone station;

replacing a telephone directory number associated with the services node with a telephone directory number associated with the first telephone station;

determining information associated with the first telephone station from a database stored at a services control point;

audibly communicating the information associated with the first telephone station to the second telephone station; and

visually communicating the telephone directory number of the first telephone station that replaced the telephone directory number associated with the services node to the second telephone station.

2. The method of claim **1**, further comprising:

transmitting an audible message to the second telephone station requesting a response identifying whether to accept or reject the call.

3. The method of claim **2**, further comprising:

receiving from the second telephone station a signal identifying whether to accept or reject the call.

4. The method of claim 3, further comprising:

connecting the first telephone station and the second telephone station if the second telephone station accepts the call; and

terminating the call if the second telephone station rejects the call.

5. The method of claim 4, wherein terminating the call comprises:

connecting the first telephone station with the voice mailbox of the second telephone station.

6. The method of claim 4, wherein terminating the call comprises:

continuing to send a ringing signal to the first telephone station until a ring timer expires.

7. The method of claim 1, wherein receiving a telephone call from the first telephone station directed to the second telephone station comprises:

receiving information associated, with the first telephone station and the second telephone station.

8. The method of claim 1, wherein determining information associated with the first telephone station from a database stored at a service control point, comprises:

receiving at least 50 characters of data from said database.

9. The method of claim 1, wherein retrieving information associated with the first telephone station from the service control point comprises:

retrieving a name associated with the first telephone station.

10. A method for providing audible and visual caller information for calls routed from a first telephone station to a second telephone station via a switching network, comprising:

placing a first telephone call from the first telephone station directed to the second telephone station via a first service switching point of the switching network;

placing a second telephone call from a services node to the second telephone station via a second service switching point;

replacing a telephone directory number associated with the services node with a telephone directory number associated with the first telephone station;

determining information associated with the first telephone station from a database stored at a services control point;

audibly communicating the information associated with the first telephone station to the second telephone station; and

visually communicating the telephone directory number of the first telephone station that replaced the telephone directory number associated with the services node to the second telephone station, wherein retrieving information associated with the first telephone station from the service control point comprises:

at the service control point, quelying a second service control point for the information associated with the first telephone station; and

receiving the information associated with the first telephone station from the second service control point.

11. In an advanced intelligent network comprising a service switching point connected to a first telephone station, a plurality of services nodes each having interactive data systems, a service control point containing a database, and a second telephone station, a method of audibly and visually providing information concerning the first telephone, comprising:

at a first service switching point, placing a first call from the first telephone station to the second telephone station;

at the first service switching point, forwarding a request to the service control point to identify one of the plurality of services nodes to place a second call to the second telephone station;

at the service control point, identifying one of the plurality of services nodes to place the second call to the second telephone station and replacing a telephone directory number associated with the identified services node with a telephone directory number associated with the first telephone station;

at the services node identified by the service control point, forwarding a request to the service control point to provide information associated with the first telephone station;

at the service control point, identifying information associated with the first telephone station from a database on said service control point;

at the services node identified by the service control point, receiving the information associated with the first telephone station from the service control point;

at the services node, placing the second call to the second telephone station and audibly announcing the information associated with the first telephone station to the second telephone station; and

visually communicating the telephone directory number associated with the first telephone station that replaced the telephone directory number associated with the identified services node to the second telephone station.

12. The method of claim 11, wherein identifying information associated with the first telephone station comprises:

retrieving at least more than 15 characters of data from said database.

13. The method of claim 11, wherein the request to the service control point to identify one of the plurality of services nodes comprises information identifying the second telephone station.

14. The method of claim 11, wherein identifying one of the plurality of services nodes to handle a call comprises querying a database using information identifying the second telephone station.

15. The method of claim 11, further comprising receiving at the services node identified by the service control point a request from the second telephone station to accept the call from the first telephone station.

16. The method of claim 11, further comprising receiving at the services node identified by the service control point a request from the second telephone station to reject the call from the first telephone station.

17. The method of claim 11, wherein identifying the information associated with the first telephone station comprises:

querying a database at the services control point for the information associated with the first telephone station; and

if no information is found in the database at the service control point, querying at least another service control point for the information associated with the first telephone station; and

at the service control point transmitting the information associated with the first telephone station to the services node.

18. The method of claim 11, wherein audibly announcing the information associated with the first telephone station to the second telephone station comprises:

converting textual information to audible signals.

19. The method of claim 18 wherein converting textual information to audible signals comprises:

converting textual information to audible signals by means of computer-generated sounds.

20. The method of claim 18 wherein converting textual information to audible signals comprises:

playing pre-recorded sound files.

21. A system for audibly and visually announcing information associated with a first telephone station to a second telephone station, comprising:

a first service switching point in communication with the first telephone station, the first service switching point adapted to place a first call from the first telephone station to the second telephone station;

a services node communicating with the first service switching point, the services node adapted to place a second call to the second telephone station and audibly announce information associated with the first telephone station to the second telephone station; and

a service control point communicating with said first service switching point, a second service switching point and said services node, said service control point replacing a telephone directory number associated with said services node with a telephone directory number associated with the first telephone station, said service control point having a database including information associated with the first telephone station wherein said services node receives said information associated with the first telephone station from said service control point, and communicates an audible announcement of said information to said second telephone station and visually communicates said telephone directory number associated with said first telephone station that replaced said telephone directory number associated with said serviced node via said second service switching point.

22. The system of claim 21, wherein the service control point, upon receipt of a request from the first service switching point, queries a database and identifies a services node adapted to connect the first telephone station and the second telephone station.

23. The system of claim 21, wherein a signal is detected at the first service switching point to initiate a request for audio information associated with the first telephone station to be sent to the second telephone station.

24. The system of. claim 21, wherein the identified services node sends a message to the service control point requesting information concerning the first telephone station.

25. The system of claim 21, wherein the service control point queries the database and returns information concerning the first telephone station to the services node.

26. The system of claim 21, wherein said database including information associated with the first telephone station on said service control point comprises at least more than 50 characters of data.

27. The system of claim 21, wherein said service control point queries at least a second service control point for information associated with the first telephone station.

28. The system of claim 27, wherein said service control point sends information associated with the first telephone station to the services node.

29. The system of claim 21, wherein the services node converts the information associated with the first telephone station to an audible message.

30. The system of claim 29, wherein the audible message is computer-generated.

31. The system of claim 30, wherein the computer-generated message includes pre-recorded speech files.

32. The system of claim 21, wherein the services node requests the second telephone station to identify if the second telephone station will accept or reject the call from the first telephone system.

33. The system of claim 21, wherein the second telephone station accepts the call from the first telephone station and the services node connects the first telephone station and the second telephone station.

34. The system of claim 21, wherein the second telephone station rejects the call from the first telephone station and the services node terminates the call from the first telephone station.

35. The system of claim 34, wherein the services node directs the call from the first telephone station to the second telephone station to the voice mailbox of the second telephone station.

36. The system of claim 35, wherein the services node continues to transmit a ringing signal to the first telephone station until a ring timer expires.

37. The system of claim 21, wherein said services node upon receipt of a request from the second telephone station to accept the call from the first telephone station connects the first telephone station and the second telephone station.

* * * * *